CHEM-BIO DEFENSE

Quarterly

Vol. 4 No.1

Black History Month

Edward A. Bouchet

Harriet Pikens & Frances Wills

Garrett Morgan

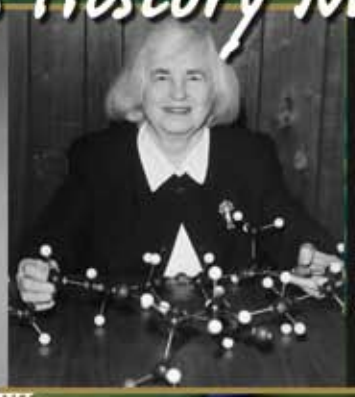
Brennie Hackley

Charles R. Drew

malcolm X
james langston hughes
Frederick Douglass
booker t. washington
Sojourner Truth
Maya Angelou
Jesse Owens
W.E.B DuBois
Toni Morriso
Mary McLeod Bethune
Rosa Parks
Thurgood Marshall
Ida Wells-Barnett
alexander crummell
George Washington Carver
Martin Luther King Jr.

Women's History Month

Chien-Shiung Wu



Isabella Karle

Stephanie Kwolek

Barbara McClintock

Wilma Vaught

Abigail Adams
Eleanor Roosevelt
Jane Addams
Jacqueline Cochran
Clara Barton
sarah buel
susan B. Anthony
marian wright edelm
Amelia Earhart
Rebecca Adamson
Carol Moseley Braun
Helen Keller
emily dickinson
Lucretia Motts
elizabeth blackwell

Cover: Chem-Bio Defense Quarterly magazine recognizes Black History Month in February and Women's History Month in March. Short biographies of those featured on the cover are on pages 11 and 15. Concept and design by Tonya Maust, Camber Corporation.

"Naval Station Norfolk first responders enter the base movie theater to remove causalities, Nov. 1, 2006 as part of the Installation Protection Program's (IPP) full scale exercise. The IPP supplied the Level A and B protective ensembles, the Self Contained Breathing Apparatus' and the Improved Chemical Agent Monitor (in the white bucket.)" Photo by Bart Hutchinson, JPM Guardian.

U.S. Marines from Expeditionary Strike Group One, 13th Marine Expeditionary Unit wade ashore from a landing craft from the amphibious assault ship USS Tarawa (LHA 1) in preparation for an upcoming amphibious assault landing demonstration for Exercise Bright Star in Mubarek Military City, Egypt, on Sept. 13, 2005. The multinational exercise, held every two years in Egypt, is the largest and most significant coalition military exercise conducted by U.S. Central Command. DoD photo by Airman Apprentice Shannon Garcia, U.S. Navy. (Released)

CONTENTS

Col. Kyle Burke
USA

Col. Mark Malatesta
USA

Mr. Jim Nelson
USMC

Mr. Scott White
USN

Col. David Williams
USA

Mr. Will Hartzell
USAF

Mr. Stan Enatsky
USN

Col. Daniel Berry
USAF

Guest Columnist: Col. Mark Malatesta

Col. Mark Malatesta
Joint Project Manager, Guardian

As we begin 2007, Joint Project Manager Guardian (JPMG) programs are hitting their stride, delivering vital force protection and response capabilities to Department of Defense (DoD) installations and units. In partnership with the Services and the Combatant Commanders, JPMG has rapidly provided capabilities both to continental United States (CONUS) and area of responsibility (AOR) installations. These capabilities and enhancements include:

- 36 CONUS bases with Chemical, Biological and Radiological (CBR) Installation Protection
- 44 bases with Integrated Commercial Intrusion Detection Systems (ICIDS)
- 59 Non-Intrusive Inspection (NII) systems into the AOR
- 128 Battlefield Anti-Intrusion Systems (BAIS) to units en route to the AOR
- Successfully transitioned two next generation capabilities to production: the Mobile Detection Assessment Response System (MDARS) and the Unified Command Suite (UCS).
- Initiated an enterprise level life-cycle management program for CBR Commercial-Off-The Shelf (COTS) items for all of JPEO-CBD to support DoD and interagency customers.

Our mission is to provide integrated conventional and non-conventional weapon defense capabilities for installation force protection and provide support to civilian authorities. Our goal is to provide timely, effective and affordable capabilities to our customers wrapped with superior service and life-cycle management. Our strategy is to provide integrated, modular, scalable and tailorable CBR and security protection capabilities to military installations, forward operating bases and tactical units that are interoperable with both DoD and civilian capabilities. Our Product Managers work closely with the other JPMs, the Defense Threat Reduction Agency, the Services, Combatant Commanders, Joint Staff and other Federal agencies to leverage available expertise and technology to make this vision a reality. An example of close coordination is JPMG working with the Assistant Secretary of Defense for Homeland Defense to finalize agreements to leverage BioWatch, Domestic Nuclear Defense Office capabilities and DHS environmental programs for applicable installations.

We are also bringing the future into the present by developing an advanced physical security initiative through a Joint Experiment/Joint Concept Technology Demonstration (JE/JCTD) under the auspices of the Physical Security Equipment Action Group (PSEAG) and the Services. It will integrate the best available physical security and CBR technology to provide comprehensive force protection capabilities to military installations. The objective of the JE/JCTD is to demonstrate, assess and transition a Joint force protection command and control capability of an integrated family of systems that includes detection, assessment and surveillance systems; automated entry; NII; personnel alerting; and active and passive response capabilities.

The CBR and physical security threats to U.S. military installations, units at war and personnel continue to grow and mature in complexity and lethality. We have the requirement to protect personnel and facilities and to ensure an effective and timely response capability. Additionally, security is a national effort. This means that we must effectively partner with our DoD and civilian counterparts to ensure that we provide appropriate and optimized protection, detection and response capabilities that are synchronized with the National Military Strategy, to provide the right equipment at the right time to the right place to provide the most effective conventional and non-conventional force protection capability.

JPM Guardian is comprised of three Product Management (PM) offices which provide distinct, but not unrelated, services and products. The PM for the Installation Protection Program (IPP) provides tiered CBR protection and response capability to DoD installations for the protection of essential personnel, continuity of critical missions, and quick restoration of essential operations. The PM for Consequence Management (CM), formerly known as PM Weapons of Mass Destruction–Civil Support Systems, supports the National Guard Bureau, U.S. Army Reserve (USAR) and other CBR response units through development, procurement and fielding of critical CBR incident protection and response capabilities. These include the Analytical Laboratory System (ALS), Unified Command Suite (UCS), CBR response trailers and survey equipment. They also provide life-cycle management of CBR COTS equipment. The PM for Force Protection Systems (FPS) manages the research, development and acquisition of physical security equipment and force protection systems to meet the immediate and future needs of both military installations and tactical units.

In this issue we will provide you with an overview of the JPMG's physical security and CBR protection and response programs and give you a closer look at what these programs are doing to provide improved force protection and homeland defense capabilities to our military forces.

The articles include an overview of the PM-FPS, including its four programs of record: the MDARS, the Lighting Kit Motion Detector (LKMD), ICIDS and BAIS. These systems are key to providing physical security capabilities to Army operational units and installations and facilities worldwide. You will also see an article for PM-CM related to their program's efforts to support the National Guard Bureau Civil Support Teams and other response units. The use of COTS products allows the program manager to reduce development and procurement timelines and get critical equipment to the warfighter cheaper and faster.

When we look at the JPM Guardian mission in terms of the Global Struggle Against Violent Extremism, it is easy to understand our focus on protecting U.S. facilities and the people on them, whether they are warfighter or civilian. We know symbols that represent the American military or its democracy, whether it is an American military base or facility or an iconic landmark, are a target and that the terrorists' reach can unfortunately extend to our domain.

I certainly hope you enjoy reading about the contributions and efforts of the JPMG and other JPEO-CBD personnel to the security of our nation and in support of the global war on terror.

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ANDREWS First Up for Installation Protection Program

By Byron Hurst/ JPMG IPP Analyst-Camber Corporation

Andrews Air Force Base, MD, became the Department of Defense's first facility to receive the Installation Protection Program (IPP). The close proximity of Andrews AFB to the Product Manager IPP office in Falls Church, VA, allowed for efficient and effective coordination during the development and refinement of critical design and fielding processes. It also offered Air Force and Office of the Secretary of Defense staffs the opportunity to observe and participate in shaping the direction of the program. The original funded plan called for 200 installations – including Andrews – to receive Chemical, Biological, Radiological, and Nuclear (CBRN) defense resources, including fixed chemical and biological sensors, Radiation Portal Monitors and Collective Protection for critical facilities. Some of the main functional components fielded at Andrews includes:

- Fixed Chemical Detectors
- Fixed Biological Detectors
- Fixed Radiological Monitors
- Handheld CBRN Detectors
- Individual Protection Equipment
- Collective Protection (COLPRO)
- Decision Support System (DSS)
- Handheld communication devices

The new system fielded at Andrews AFB has improved its protection and response capability in a CBRN incident. For example, one scenario involves a chemical alarm that alerts the command that a chemical agent has been detected through the DSS. Using the checklists, plume models and other tools in the DSS, the incident commander can identify the type of chemical hazard, predict the affected area, and implement planned and practiced procedures to warn personnel, protect critical missions and isolate the affected area. The result is a system and a process that gives the incident commander better information faster and improved response times to better protect personnel and maintain critical operations.

This new capability has enhanced awareness and improved the Andrews concept of operations (CONOPS) which allows first responders at the base to respond more effectively to a CBRN attack, said Airman 1st Class Ryan Bellack, a Fire Protection Specialist who operates the DSS. Prior to IPP, the base would send an entire Hazardous Material team to investigate and determine the source of a CBRN contamination, said Chief Paul Pitrat of the Fire and Emergency Service Flight of the 316th Civil Engineer Squadron. Because of the quality and speed of the information coming from the DSS, Pitrat can send fewer, better prepared people to an incident scene that is better defined.

During the fielding at Andrews, IPP turned numerous challenges into lessons learned. During the initial site survey, traffic flow rates at the gates were not adequately addressed. During the design phase, IPP learned that understanding the CONOPS impacted the placement and setting of alarm sensitivity. During the construction phase, IPP dealt with coordinating and fielding during ongoing installation construction. Finally, coordinating with the installation regarding training dates was a challenge as well as balancing existing operational requirements and a change of leadership.

With all of these lessons learned, Andrews became a vital training ground for PM IPP to learn how to best coordinate with the Service, its installations and the LSI when designing and fielding its products. The base, as well as Headquarters Air Force, provided invaluable assistance as they partnered with PM IPP to improve the product for future installations.

Installation Protection Program

By Byron Hurst/ JPMG IPP Analyst-Camber Corporation

The United States awakened to the tremendous asymmetric threats non-state actors could impose with the terrorist attacks of September 11, 2001. In 2007, those threats still exist. Numerous studies, national reports and strategy documents have concluded it is only a matter of time before the U.S. is faced with a real time chemical, biological, radiological or nuclear (CBRN) incident. Significant efforts have been underway since 2003 to lessen the risk and reduce the impact of a potential CBRN incident to Department of Defense (DoD) installations.

In 2003, the DoD established the Joint Project Manager Guardian (JPMG) to develop, implement and execute the Installation Protection Program (IPP). This program provides CBR protection and response capability to critical military installations to protect personnel, maintain critical missions, and quickly restore essential operations. The IPP is chartered to design, field and sustain an integrated family of CBR systems. In 2005, Program Decision Memorandum III (PDM III) significantly reduced the IPP funding and directed a study to revise the IPP. The Assistant to the Secretary of Defense for Nuclear and Chemical and Biological Defense approved a revised program, informally dubbed "IPP Lite," which focused on providing first responder, mass notification and incident management capabilities to continental U.S. (CONUS) installations. The PDM III directed study was completed in June 2006 and recommended a tiered approach to Individual Protection (IP) and an increased emphasis on providing IP capabilities to outside CONUS installations.

In the CBRN Explosive - Installation Protection (CBRNE-IP) Study Report, the core working group represented by all services including the medical community, key Office of the Secretary of Defense directorates and the Joint Requirements Office (JRO) identified 79 materiel and non-materiel gaps in the CBRNE installation protection architecture. The group also made recommendations to resolve many key non-materiel gaps, including identification of a single DoD entity responsible for resolving cross functional policy and doctrinal issues, establishment of CBRNE-IP standards, improve military and civilian interoperability, and better identification and integration of medical requirements.

"Three-Tiered approach"

The Three-Tiered concept is intended to provide modular, tailorable and scalable CBRNE-IP capabilities to DoD installations based on the criticality of their missions. The figure below captures the capabilities provided by each tier.

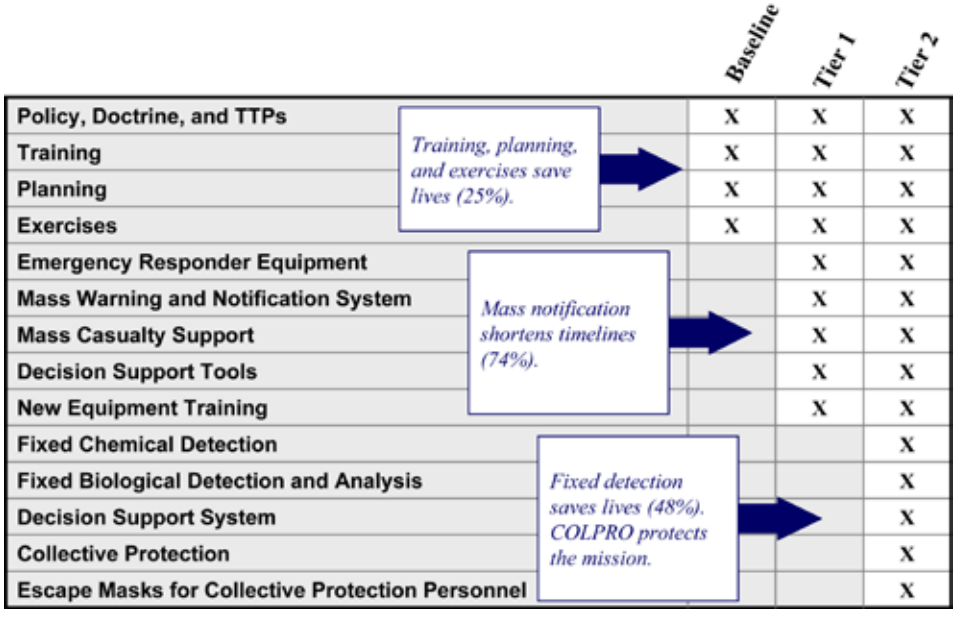


Figure 1

The Baseline Tier accounts for non-materiel solutions and addresses interoperability, system architecture, policy, doctrine, training and administration. The Product Manager, IPP is responsible for developing the Baseline tier in coordination with the JRO and the Services. The Baseline Tier is basically a tool kit of resources for all DoD installations to use such as training products, planning templates, Mutual Aid Agreement templates and exercise templates and scenarios. This solution set will be fielded in fiscal year 2008 to all Services and DoD agencies.

For installations designated to receive Tier 1, the solution set will provide enhanced CBR protection and response capabilities to installation emergency responders, first responders, and first receivers; expanded mass notification and warning systems to critical areas on the base; mass casualty decontamination and decision support tools to aid decision makers. Resources have also been added to provide a mobile, more robust biological detection capability, shelter-in-place enhancements and more sustainable decision support tools than what was provided in IPP Lite.

Tier 2 installations will receive a solution set that encompasses all of the Baseline Tier and Tier 1 capabilities, and provides fixed chemical and biological detection, a robust Decision Support System (DSS), collective protection and escape masks for personnel working in collectively protected areas.

The Way Ahead

To successfully implement the recommendations of the study, it is extremely important for IPP and JPMG to maintain a close partnership with the Services as systems are fielded and the architecture matures through the injection of state-of-the-art technology. This synergy of effort is critical as the program seeks to deploy effective and service-focused IPP solution sets to 72 installations by the end of December 2007. In addition, all DoD installations will have the Baseline solution set to keep current on baseline standards and training resources to support the IPP.

It is also critical that JPMG aggressively leverage other military and the Department of Homeland Security (DHS) to improve the overall capability and affordability provided by the IPP to military installations. Partnerships with the Assistant Secretary of Defense for Homeland Defense and key offices within DHS are assisting us in leveraging programs such as BioWatch, coordinate incident notification procedures and improve military-civilian interoperability at the local level.

The IPP is already making an impact. One of installations currently receiving IPP Lite is Dover Air Force Base, where more than $230,000 in CBRN first responder and decision support tools were provided. The commander of the 436th Airlift "Eagle" Wing, Col. Chad Manske, said, "The Guardian Program gave us some great tools to enhance and build upon our current capabilities. By far, I think one of the best aspects of the Guardian Program was getting all of our crisis personnel in one room to talk about how all this new equipment integrates into our emergency response program."

There are challenges ahead for IPP ahead but the path is clear – partner with Services and stakeholders to deliver affordable and effective CBR protection and response capabilities to military installations around the globe.

Photo by Bart Hutchinson

THE COUNTER-BIOLOGICAL

By Col. Tom Billick, USAF
Deputy Director for Counterproliferation, Directorate of Strategic Security, DCS/ Air, Space & Information Operations, Plans & Requirements (HQ USAF/A3SC)

The threat of a biological attack on U.S. forces is real, but existing guidance and capabilities to counter this danger are not sufficient to defend against the full spectrum of biological agents. Biological agents and their effects can vary significantly due to disease communicability, lengthy incubation periods, probability of detection, and means of infection and delivery. The sheer diversity of potential biological threats complicates Air Force planning and puts Air Force ability to survive and operate at risk.

Current Air Force ability to counter biological threats relies heavily on first responders and the medical community. That's about to change. The potential effects of a biological attack on Air Force operations demand an installation-wide strategy. To that end, the Chief of Staff of the Air Force (CSAF) recently approved a Counter-Biological Warfare Concept of Operations (C-BW CONOPS) for implementation across the Air Force.

The CONOPS is designed to enable Air Force units to sustain critical operations while preparing for, protecting from, responding to, and recovering from biological events in all environments, regardless of the threat, location or type of operations. The objective is to optimize existing installation materiel and non-material resources to limit casualties and sustain mission capability by establishing a framework to guide unit preparations and responses to a biological attack or incident. Installations will accomplish this by implementing strategies that minimize exposure to biological agents and reduce the impact of unpreventable exposure. Keeping personnel healthy is the key to ensuring operational capability during a biological event.

Towards a C-BW CONOPS

The Air Force's initial analysis of the biological warfare problem resulted in a study titled "Biological Defense and the U.S. Air Force." The study was conducted in 2001 and published following the 9/11 attacks and the anthrax letter attacks in Florida, New York and Washington DC. The study and the anthrax letters highlighted the pressing need for the Air Force to focus on the biological threat. Specifically, the study findings indicated that the Air Force did not adequately understand the biological warfare operational environment. In addition, the Air Force mistakenly approached counter-biological warfare operations as a subset of existing counter-chemical warfare operations. The study also found critical gaps in Air Force bio-defense capabilities and noted that subject matter expertise necessary to respond effectively to biological attacks was scattered across numerous functional organizations.

In response to these findings, the Air Force published informal guidance in early 2002 titled "Force Protection and Operations in a Biological Warfare Environment – Commander's Guidelines," to provide Air Force units with a baseline for biological warfare event preparation and response. In July 2002, the CSAF chartered a Biological Defense Task Force to bring functional disciplines within the Air Force together to review the threat posed by biological weapons, develop strategies to employ available tools and capabilities, recommend near-term solutions and establish a set of base-level responses. The task force documented more than 50 detailed recommendations to improve operational capability, doctrine, guidance, education, training, exercises, joint involvement, funding and organization. The task force also produced an Interim Bio-Defense Plan to enhance base-level planning and preparation.

Kunsan Focused Effort

To address gaps in capability and establish an enduring way ahead, the Air Force launched a major field study to develop and test improved counter-biological warfare practices in an operational environment. In 2004 and 2005, the Eighth Fighter Wing (8 FW) at Kunsan Air Base, Republic of Korea, served as the focal point for an 18-month experiment known as the Kunsan Focused Effort. The initiative sought to create and implement innovative, installation-level strategies, plans, materials, tools and procedures that could eventually be applied across the Air Force to improve base capability to limit casualties and sustain operations following biological attacks or incidents. Solutions developed by cross-functional experts used existing wing capabilities/ infrastructure and were based on the latest scientific data and tailored operational research/analysis. Exhaustive modeling and simulation was employed to estimate primary biological threats, attack parameters, detector utility, expected disease progression, and the effects of prophylaxis and other disease containment measures on casualties and sortie generation.

The Kunsan Focused Effort enabled 8 FW leadership and functional experts to better employ their personnel, existing equipment and other biological defense resources. The project accomplished this by leveraging both an improved understanding of the biological warfare hazard environment and cross-functional collaboration to develop practical strategies and procedural solutions to sustain operations. Products developed during the Kunsan Focused Effort support enhanced biological education and training; threat and operational analysis; force health protection; sampling, detection and identification; disease containment; decontamination; casualty management, and decision making. Following more than a year of close cooperation, the 8 FW successfully demonstrated it's ability to minimize casualties while maintaining operational effectiveness during a comprehensive, three-day wing exercise. The exercise was conducted in a simulated war time environment and featured a simulated large scale contagious disease (plague) outbreak on the base.

The Air Force C-BW CONOPS

The C-BW CONOPS is an outgrowth of all of the Air Force's previous work on

WARFARE CONOPS:
PREPARING THE U.S. AIR FORCE TO COUNTER BIOLOGICAL THREATS

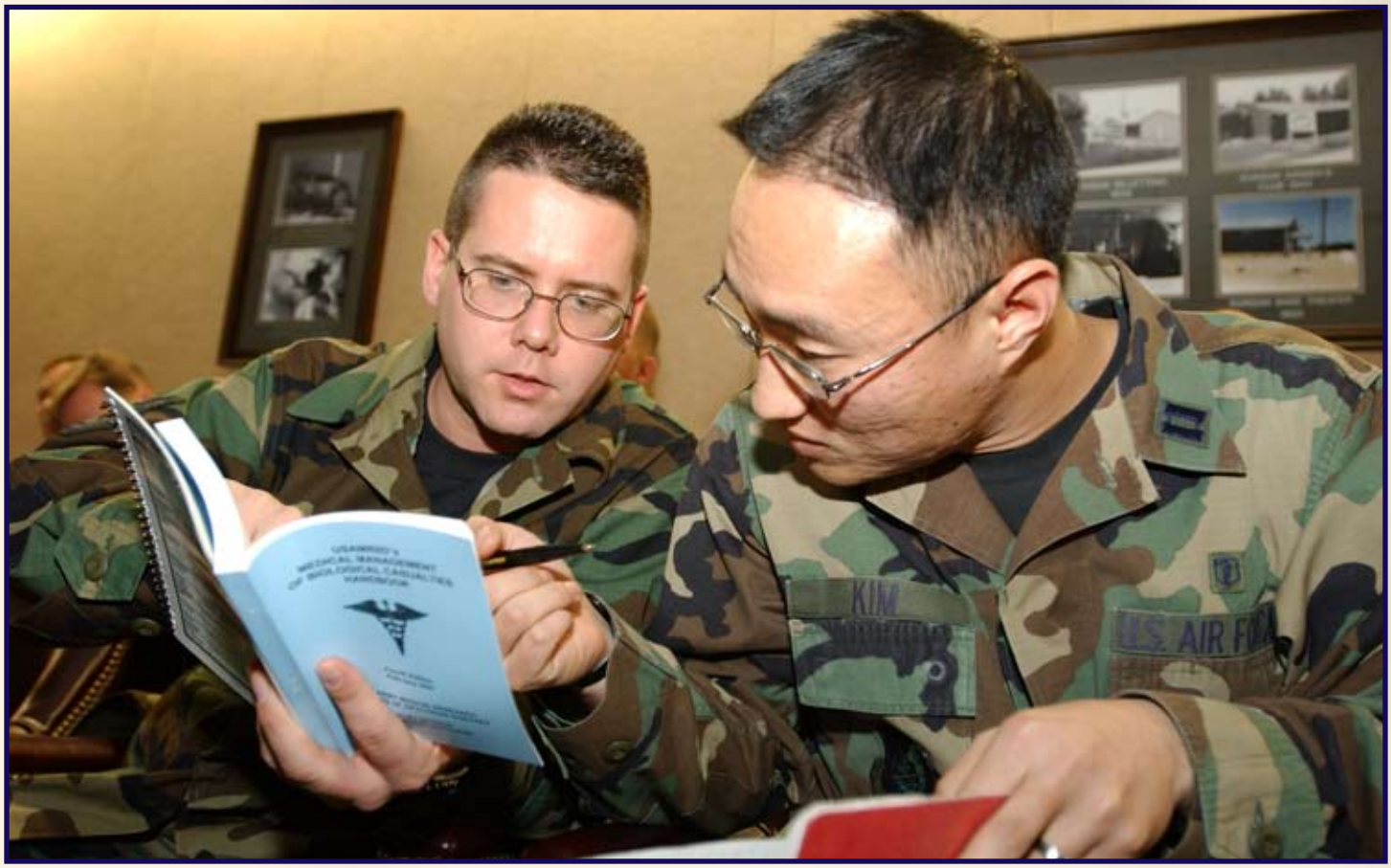
countering biological warfare, especially the Kunsan Focused Effort. The document outlines the Air Force approach for countering biological warfare, terrorism, and naturally occurring disease outbreaks. The CONOPS prescribes actions to be taken before, during, and after a biological event to limit casualties and sustain mission capability at Air Force installations.

The CONOPS includes four main elements: layered biological defense, trigger events, disease containment and operational risk management.

Layered biological defense refers to an installation's existing integrated defense capabilities and added force health protection measures, which provide multiple means to protect and sustain critical mission operations. Installation physical security, including air and perimeter defense, prudent use of force protection condition levels, resource/facility security, individual situational awareness and familiarity with the threat are all important. These measures can help deter attacks by complicating adversary plans. Detection and identification of harmful biological agents through environmental sampling, automated biological detection systems, medical surveillance and lab analysis, provide a second layer of defense. Early identification of a biological threat enables base leadership to implement targeted actions to effectively limit the effects of a biological attack or incident. Finally, individual protection through the administration of vaccines and prophylaxes, use of protective clothing and equipment, adherence to sound personal hygiene practices, and understanding the biological hazard, provides the innermost layer of defense. These measures help to minimize exposure and increase force survivability and mission accomplishment.

The term "trigger events" refers to indications that a biological event is likely to occur, may have occurred or has occurred. Trigger events prompt commanders to initiate response measures and provide time-critical information that help an installation tailor its response. It is possible that trigger events will occur outside the perimeter of the installation, thus close ties with state and local public health departments/facilities must be established and maintained. There are four triggers that may signal a biological event: intelligence triggers generally occur prior to an event; weapons and detector triggers indicate agent release and/or disease infection start times; and a sentinel casualty trigger identifies the onset of symptoms.

Disease containment is critical to preventing the spread of disease once a biological event has occurred. Effective



base-wide disease containment planning coordinates cross-functional installation capabilities and integrates the medical and non-medical measures implemented by all base personnel before, during and after a biological event. Restriction of movement measures, including social distancing, quarantine and isolation, serve as the key instrument of disease containment. These measures assist in breaking the chain of infection by minimizing contact between infected persons and the greater population. The integration of preparation, response and sustainment measures with associated tactics, techniques and procedures requires command oversight and base-wide cooperation to contain the spread of disease.

Finally, the base commander will use operational risk management to evaluate possible courses of action, identify risks and benefits, and determine the best course of action for installation response. Available courses of action will change based on what is known and when it is known. In some cases, limiting or ceasing operations may be the best response to a disease outbreak. In other cases, criticality of the mission may require that the commander sustain operations while also responding to the biological event. In these situations, commanders must assess the risks and benefits associated with their response options and implement those actions that offer the greatest possible protection to base personnel while imposing the least operational cost.

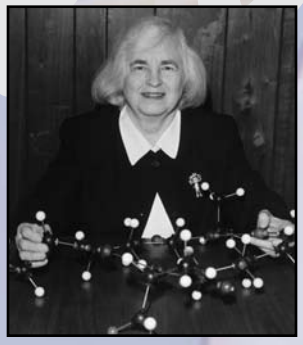
Implementing the C-BW CONOPS

At present, the Air Staff and Air Force Major Commands (MAJCOMs) are preparing to implement the CONOPS across the Service. Full implementation will occur over a two-year period. A comprehensive implementation plan outlining Air Staff, MAJCOM, and installation responsibilities and milestones has been created to fully integrate the precepts of the CONOPS into Air Force operations.

A critical element of the C-BW CONOPS implementation process is Air Force Instruction (AFI) 10-2604, Disease Containment Planning Guidance. This document provides policy and guidance for disease containment planning, outlines roles and responsibilities and identifies planning considerations. It also directs all Air Force installations to develop and exercise a base-wide Disease Containment Plan and supporting checklists to prepare for and respond to biological events. The new instruction is accompanied by a sample Disease Containment Plan to aid installations in the development of their own plans. The sample Disease Containment Plan, along with other AF/A3SC developed products, can be found on the Commander's C-CBRN Resource website: https://www.a3a5.hq.af.mil/a3s/a3sc.

The past few years have brought vivid and painful reminders that our people, installations and homeland are targets for our adversaries. By planning and preparing to counter biological threats, the Air Force will save lives and sustain the ability to protect our nation and further its interests by providing air and space power when and where it is needed.

Women's History Month



ISABELLA KARLE

Isabella Karle invented new methods, using first electron and then X-ray diffraction, to study the structure of molecules. One of Dr. Karle's most notable achievements is the development of the "Symbolic Addition Procedure," which has become the method of choice for structure determination from X-ray diffraction data on crystalline materials. In recognition of this work she was awarded the National Medal of Science by President Clinton in 1995.

STEPHANIE KWOLEK

Stephanie Kwolek discovered poly-paraphenylene terephtalamide, better known as Kevlar. She joined DuPont in 1946, specializing in low-temperature processes for the preparation of condensation polymers. In the years since, a whole new field of polymer chemistry has been built upon Kwolek's discovery. She holds 17 patents, was inducted into the National Inventors Hall of Fame in 1995 and received the National Medal of Technology in 1996.

BARBARA McCLINTOCK

Barbara McClintock was a pioneering American scientist and one of the world's most distinguished cytogeneticists. During the 1940s and 1950s, McClintock discovered transposition and used it to show how genes are responsible for turning physical characteristics on or off. Awards and recognition of her contributions to the field include the Nobel Prize in Physiology or Medicine in 1983. Awarded for her discovery of genetic transposition, she has been the first and only woman to receive an unshared Nobel Prize in that category.

Brig. Gen. WILMA VAUGHT, USAF (Ret.)

Brig. Gen. Wilma Vaught, USAF (Ret.) is one of the most decorated women in U.S. military history and the Air Force's first female general. Retiring in 1980, General Vaught became the driving force behind the building and dedication of the Women in Military Service for America Memorial in Washington, DC. She served on the Committee on Women in the Armed Forces in NATO from 1984-85. Vaught was also a member of the International Women's Forum.

CHIEN-SHIUNG WU

Chien-Shiung Wu was a Chinese-American physicist with an expertise in radioactivity. She worked on the Manhattan Project (to enrich the uranium fuel) and disproved the conservation of parity. Many scientists called her various nicknames, such as "First Lady of Physics," "Madame Curie of China" and "Madame Wu."

COTS-BASED SUCCESSES IN THE PM CONSEQUENCE MANAGEMENT PROGRAM

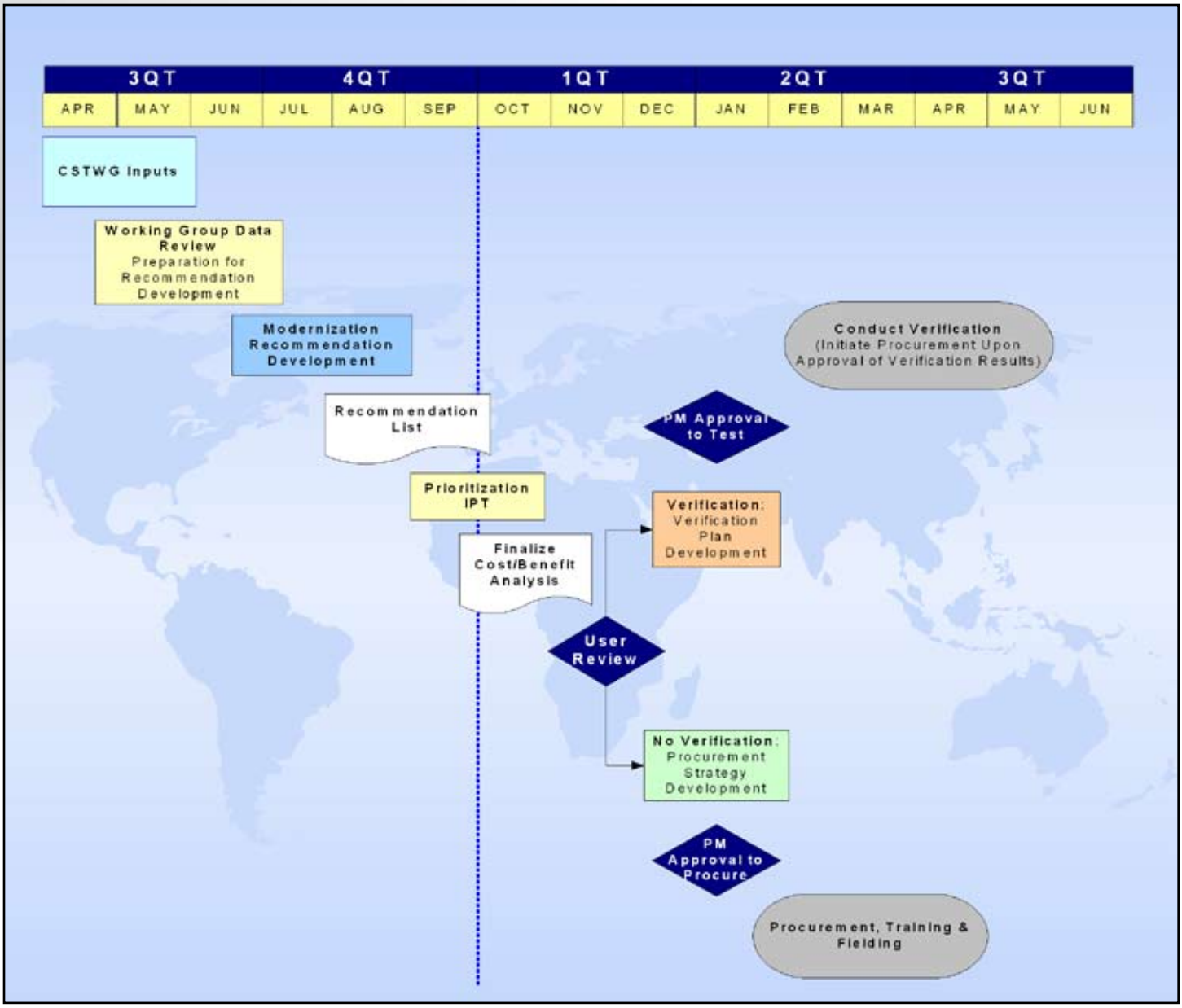
By Mr. William Wall

Throughout the Department of Defense (DoD), commercial-off-the-shelf (COTS) items are procured to increase the efficiency of providing critically needed equipment to the field while taking advantage of new and emerging technologies in the marketplace. The Product Manager Consequence Management (PM CM) is the DoD's leader for the procurement of COTS equipment for chemical, biological, radiological and nuclear (CBRN) protection and response. The PM CM, under the Joint Program Manager Guardian (JPMG) and co-located with the Edgewood Chemical Biological Center in Edgewood, MD, is strategically positioned to provide the right equipment for Consequence Management purposes.

The PM CM currently oversees three programs: the Unified Command Suite (UCS), the Analytical Laboratory System (ALS) and the Chemical/Biological Defense–Small Project Acquisitions Program (C-SPA) and anticipates an expanding role in the area of identification, evaluation, procurement and fielding of CBRN COTS systems for DoD response units. The PM CM uses the procurement of COTS equipment to leverage the benefits of the fast-paced detection and analytical markets. The advantages of a COTS-based procurement center is the ability to acquire state-of-the-art technologies as they emerge from the commercial market and that developmental costs and improvements to COTS equipment are typically borne by the vendor. In addition to procuring and sustaining COTS equipment, PM CM also identifies the best candidate systems against user requirements and validates vendor claims against national standards such as those of the National Institute for Occupational Safety and Health.

ON-SITE ANALYTICAL CAPABILITY COMES TO LIFE

In the world of responding to WMD incidents, the ability to quickly and accurately identify chemical and biological agents is crucial. Historically, samples are collected at the incident site and transported to a laboratory for analysis. Unfortunately, this takes time and the incident commander needs the information quickly so he can safely mitigate the situation. The mission of the ALS is to provide a presumptive analysis of unknown or potential agents at an incident site and relay that information electronically via the UCS to the First Responder Incident Commander. With the ALS, the National Guard's Weapons of Mass Destruction–Civil Support Teams (WMD-CST) are able to bring high-end analytical laboratory capabilities to incident commanders in the field. This system uses COTS



equipment, such as Gas Chromatography/ Mass Spectroscopy and Fourier Transform Infrared Spectroscopy, which can analyze chemical warfare (CW) agents, toxic industrial materials, toxic industrial chemicals and biological warfare (BW) agents. The ALS has the capability of communicating through the UCS to local, state and federal laboratories and other agencies for confirmatory analysis of a suspect agent.

BRIDGING COMMUNICATIONS GAPS FOR FIRST RESPONDERS

Lessons learned from numerous emergency incidents have shown numerous problems with interagency communications. Commonly, the fire department's radios are unable to communicate with police radios and neither can communicate with the scientific experts for WMD consultation. The UCS vehicle is designed to help first responders communicate to each other, provide reach-back to technical support agencies and connectivity with higher authority. It is a self-contained, stand-alone, C-130-mobile communications platform intended to provide both voice and data communications capabilities to WMD-CST Commanders. The UCS utilizes both COTS and existing government-off-the-shelf (GOTS) equipment to provide the full range of secure and non-secure communications in support of the WMD-CST mission. It is the primary means of reach-back communications for the ALS, and acts as a command-and-control hub to provide a common operating picture for planning and executing an incident response. WMD-CST commanders are able to assess the incident scene, provide technical advice to first responders and facilitate access to DoD information for the Incident Commander. Additionally, the UCS helps the WMD-CSTs provide on-site information to other DoD forces that might be called on to respond.

The UCS deployed August 31, 2005 for approximately three months in support of the Hurricane Katrina effort. The UCS provided a communication lifeline for county and parish governments as well as the deployed military command post. A total of 13 UCS vehicles were strategically located throughout Louisiana and Mississippi in support of the recovery and relief effort.

BRINGING COTS EQUIPMENT TO THE MILITARY

The C-SPA supports the National Guard's WMD-CSTs, the United States Army

Photo by: Steve Lusher

The Analytical Laboratory Suite (ALS) shown above is equipped and ready to meet the mobile laboratory needs of the Civil Support Teams.

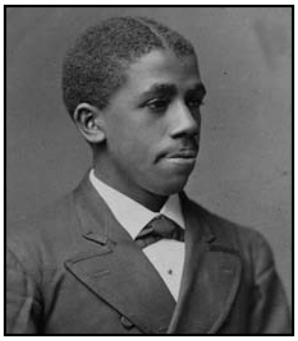
Reserve Command's (USARC) Chemical (RECON/DECON) Companies and other DoD consequence management units. These units are supplied with a wide range of COTS CBRN equipment to support multiple missions

The purpose of C-SPA is to upgrade COTS CBRN equipment capabilities and to evaluate new COTS CBRN equipment solutions against emerging standards and requirements by using a process that allows for monitoring of equipment obsolescence and scheduling of near, mid- and long-term modernizations. The C-SPA program provides Type and Non-Type Classified COTS CBRN equipment such as personal protective equipment and CBRN detection, identification, and decontamination equipment that protect individuals from the effects of CBRN contamination. The C-SPA program fills a much needed void by providing a formal, systematic method to ensure fielded COTS equipment is validated and modernized when required. The key to the process, said James Frank, the deputy PM CM, is "A simplistic but very capable database that among many other features allows vendors to routinely enter data pertaining to systems they sell." This information will ultimately be reviewed and evaluated against user requirements by working groups of recognized CBRN experts. These groups review the equipment currently fielded to users, user requirements, gaps in meeting those requirements and the potential solutions available on the commercial market. The results are provided to the user for generating a prioritized list of validated, safe and effective equipment for funding at the end of each fiscal year. An example of a COTS success is the special trailers for the USARC's Multipurpose Chemical Companies. These trailers, with their unique equipment sets, enable the chemical companies to support homeland defense missions with a robust capability.

The PM CM role in consequence management is expanding. The PM is now working with the Army's 20th Support Command (CBRN Explosive) to provide COTS equipment for their response teams. Through this effort, CBRNE response teams, Nuclear Disablement Teams, and mobile analytical laboratories will receive new equipment and a mechanism for long-term sustainment. The PM CM continues to engage more new customers to take advantage of the C-SPA program to procure COTS CBRN equipment to meet their CM needs. Additionally, PM CM is becoming more integrated with the CM community through participation in analyses and studies such as the CM Capabilities Based Assessment; expansion of their existing database to improve tracking of national and DoD standards for certified equipment, emerging technologies, equipment test reports, sustainment and shelf–life issues; and integration with other COTS CBRN equipment databases like the Responder Knowledge Base.

"PM WMD-CSS has learned valuable lessons over the past several years and has become a leader in providing COTS equipment to DoD's Consequence Management Units," said Lt Col. Jay A. Smith, PM CM. Keeping up with the advancements in COTS technology is a demanding job and PM CM continues to monitor the commercial markets to ensure that our consequence management forces are well equipped to deal with the difficult challenges they face in responding to CBRN events.

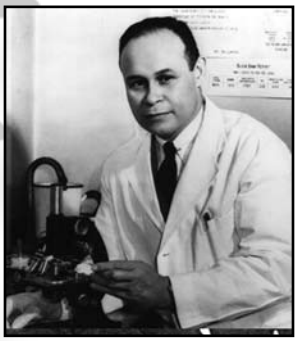
Black History Month



EDWARD ALEXANDER BOUCHET

Edward Alexander Bouchet was an African-American physicist noted for being the first African American to earn a Ph.D. from an American university. He graduated from Yale University in 1874 (the first black graduate of Yale) and completed his dissertation in Yale's Ph.D. program in 1876. Bouchet took a variety of teaching positions around the country, although he had difficulty finding work due to racial discrimination.

DR. CHARLES RICHARD DREW



Dr. Charles Richard Drew was an African-American physician and medical researcher. He developed improved techniques for blood storage, applying his expertise to develop large-scale blood banks early in World War II. He protested against the segregation of blood from donors of different races since the practice lacked scientific foundation. In 1943, Drew's distinction in his profession was recognized when he became the first African American surgeon to serve as an examiner on the American Board of Surgery.

Col. BRENNIE HACKLEY, USA (Ret.)

Col. Brennie Hackley, US Army (Ret.). Dr. Hackley was Chief Scientist and Scientific Advisor to the Commander of the US Army Medical Research Institute of Chemical Defense, Edgewood Area of Aberdeen Proving Ground, MD. He authored or co-authored more than 75 publications and 15 U.S. patents. Dr. Hackley's publications and patents contributed significantly to the development of medical antidotes for chemical warfare agents. TMB4, one of the compounds synthesized by Dr. Hackley, was fielded by Eastern Bloc nations and designated standard U.S. Air Force therapy for treating chemical exposures.

GARRETT AUGUSTUS MORGAN

Garrett Augustus Morgan was an African-American inventor who originated a respiratory protective hood, invented a hair-straightening preparation and patented a type of traffic light traffic signal. He is renowned for a heroic rescue in which he used his hood to save workers trapped in a tunnel system filled with fumes.

HARRIET PIKENS AND FRANCES WILLS

Harriet Pikens and Frances Wills were the first two African-American WAVES (Women Accepted for Volunteer Emergency Service) officers, sworn in December 22, 1944. Of the 80,000 WAVES in the war, a total of 72 black women served, normally under integrated conditions.

Amoretta M. Hoeber

Building the "Good Old Girls" Network

Ms. Hoeber is president of AMH Consulting, a Potomac, MD company. Since 1991 she has provided consulting on a wide range of defense and environmental matters – including program planning and independent assessments for the Federal government and participation in projects, studies, management reviews, market and budget analyses, and business development activities for a wide variety of private industry clients. Technical and programmatic specialties include chemical and biological defense, chemical weapons demilitarization, Cooperative Threat Reduction Program nuclear weapons security and demilitarization, defense against terrorism, force protection, military preparedness, nuclear weapons complex cleanup, and ballistic missile defense.

Ms. Hoeber served for more than five years as a Presidential appointee in the Department of the Army, including as Deputy Assistant Secretary of the Army (Research and Development), Principal Deputy Assistant Secretary of the Army (Research, Development and Acquisition) and Deputy Under Secretary of the Army. Prior to her government service, Ms. Hoeber was Deputy to the Director, Policy and Strategy Analysis Division, System Planning Corporation. Earlier positions included Director, Department of Military Policy Analysis, General Research Corporation; three years with the Wohlstetter consulting group; and several years as a member of the technical staffs of the Rand Corporation, Analytic Services, Inc., and the Strategic Studies Center of the Stanford Research Institute. Ms. Hoeber has been and is active in several professional groups. She is a member of the Council on Foreign Relations and has been an occasional speaker on defense matters to Council chapters. She has also been active in the Center for Security Policy, the Chemical and Biological Arms Control Institute, and is on the Advisory Board of Women in International Security. She is also a founder and Past Chairman of the NBC Industry Group. Ms. Hoeber is a member of the Board of Directors of Versar Corporation, and was Chairman of the Board of EAI Corporation for three years prior to its sale to SAIC. She is also on the Board of the House of Ruth of Maryland. Ms. Hoeber has authored or co-authored numerous monographs, articles and books including The Chemistry of Defeat, Conventional War and Escalation, Soviet Strategy for Nuclear War, "The Soviet View of Deterrence," "The Neglected Threat of Chemical Warfare," "Reality and SALT," and "The Case Against the Case Against Counterforce."

By Julius L. Evans, JPEO-CBD Public Affairs Officer and Editor

Ms. Hoeber, our focus is on Woman's History Month. You have certainly stepped into history with your professional accomplishments.

Can you describe some of the hurdles you overcame throughout your career(s)?

Certainly in the early years of my career there were prejudices to overcome – for example, when I got out of school I was hired at a considerably lower rank and salary than the men who had equivalent academic backgrounds. And it probably took 20 years to achieve pay equality. And I think in retrospect I really *did* have to fight for things – like promotions and getting support to go to graduate school and stuff like that – that I suspect the men had far less trouble getting. But, you know, if one is in the middle of it, one doesn't really focus on the differences – one focuses on what one has to do to get to the next step or accomplish the current task or define the most interesting problems to work on. Perhaps it was harder than it should have been, but none of the obstacles were impossible.

One issue that *did* affect me, though, was that there weren't very many women doing professional work in support of the military - on anything. Thus there were no female mentors. At least there were no female professionals that were not in the role of *only* supporting their male bosses rather than trying to carve out their own territory. While I was supremely lucky in the supportiveness of the male men-

tors that I had through the years, there were many ways in which I missed having senior women with similar career paths and ambitions to talk to. (That's one reason why I take very seriously what I see as my responsibility to be a mentor to the younger women in the military business – both uniformed and civilian. I try to give them something that I know I missed that might be very useful.)

One major personal hurdle I had to overcome was my lack of a technical degree, since I was working in – and wanted to stay in – areas that were highly technical in nature. In some ways, or at least at some times, the prejudice I experienced because I wasn't an engineer or a scientist was at *least* as much as that I experienced as a result of being female. So I straightforwardly worked to overcome it – by going back to graduate school in mathematics (after having received my BA in political science), and by doing a lot of independent study to absorb technical material. And I knew I needed to learn to talk on my feet and give briefings and speeches and things like that. So I took deliberate steps to learn to be comfortable with audiences – even hostile audiences.

Women haven't traditionally been in the Chemical and Biological Defense arena, yet you achieved tremendous professional success. What sort of gender gaps did you experience as it pertains to this industry? How has that changed over the past 10 years?

I discussed my feelings about the gender gap a bit above – I think it wasn't just in the CB defense arena but throughout the defense community that there was – and still is, although it's decreasing – a gender gap. I personally think there's been *less* of a "gender gap" in CB defense than in many other areas. There are, in fact, a fairly large number of women – certainly now, and I think for the past couple of decades – working in CB defense. The ones that come to mind instantly on the civilian side of the business are Anna Johnson Winegar, Donna Shandle, Amy Alving, Janet Strong, Nicole Funk, Janet Guertin, Anne Hillegas, Lydia Thomas, Ann Huang, Daphne Kamely, Orlene Miller, Virginia Morlock, Camile Schumacher… and I'm sure I'd remember more if I took the time to think.

One of the really nice things about the decreasing gender gap in CB defense is that we women in the business *are* somewhat of a community – as I like to say sometimes, the "Old Girls Network" exists and operates well!

And because the Chemical Corps (except for a couple of years in the 1980s when it wasn't clear it would stay that way) has been open to women, there have been a considerable number of great women Chemical Corps officers that I have known. And Chemical Corps enlisted personnel – one of my favorite memories of Fort McClellan is one evening after one of the Green Dragon Balls during the early 1980s when the role of women in the Chemical Corps was being challenged, when I gathered a group of the gals then in the school – young chemical corps personnel – and we sat around the hotel bar til all hours just talking about the importance of the Corps and why I felt that it would all work out and I strongly supported them and encouraged them all to stay the course there. I'm glad they did.

I think more women are entering the field of chemical and biological warfare defense partly because the emphasis on the biological part of this is increasing. Biology has always been considered a slightly more traditional subject matter for women to pursue – for example, I note that the president of MIT is a female and a biologist.

Anyhow, yes, I have definitely noticed a change – there are clearly more women in this business over time. Mostly younger, but that bodes well for the future.

And yes, I have had considerable professional success in the CB business – this has been partly because when I started working on CB defense (back in about 1975) there were almost *no* people paying much attention to this problem. So I was, in some ways, the *only* fish in a very small pond. (And this, on top of my being female, was one reason why I think in many circles I actually got remembered…) In fact there was even an effort near that time to disband the Chemical Corps – but it turned out that since the Corps had been established by Act of Congress, that only Congress could disband it – so that effort failed. But part of the reason I focused on the problem was that I thought that the subject deserved FAR more attention than it was receiving – that it would in fact be a problem for the United States some day, and that *someone* should get some attention focused on it. So I tried. And in retrospect, in all honesty, I credit myself with having gotten some attention focused there.

You mentioned previously that based on the length of time you've been in the industry that you've had some visionary insight as to whether or not the U.S. was properly focused on the Chemical and Biological threat and you believe you helped to refocus the U.S. Can you discuss that with a little more detail?

I think I did back in the mid-1970s. I wrote a book on Chemical Warfare and I traveled the world giving a number of briefings on the topic. In the mid-1970's Andy Marshall, [Director of the Office of Net Assessment, appointed as its first director in 1973 by President Richard Nixon. Marshall has been re-appointed by every president since and currently holds the office today] had been my boss at the Rand Corporation years before. Andy sponsored me to do a study on different Soviet tactics in Europe. What he had in mind, I think, was primarily the use of small nuclear weapons. I ended up writing a book on that topic as well, but during my research, I came across a lot of interesting ideas about Soviet thinking and chemical warfare capabilities -- and as it turned out, no one was paying any attention to this material -- I mean literally no one -- and at that point in time, only two people in the Central Intelligence Agency

Photo by Steve Lusher

and in the Defense Intelligence Agency knew the material existed. So I got Andy to sponsor me to spend a year delving into the material. I created a number of highly classified briefings on the Soviet chemical warfare threat and our then 'sort of lack' of good capability to counter it. Andy also sponsored me to brief as many key position personnel as possible, which included some very interesting people. I briefed General [David C.] Jones when he was Chairman of the Joint Chiefs; and Alexander Haig [Supreme Allied Commander, Europe; 1974 - 1979] when he was in Europe. I spoke with as many senior civilian and military leaders as I could, as well as members of the political decision making community. It was a great undertaking and I think it opened a lot of eyes to the reality of the threat and the degree to which the U.S. had essentially ignored it. This was before the Chemical school moved back to Fort McClellan the first time. They were actually part of the ordinance school in Edgewood at that point. I helped, I think; to get them re-established as a separate Corps not linked with the ordinance Corps, and moved back to Fort McClellan and reorganized. I did not start out pursuing a chemical warfare career. It was essentially an accident that I ran across this stuff and decided that nobody was paying attention to it and some one needed to. So I just went on from there. I think, and one of the things I try and teach my mentees, is that careers aren't really planned. You plan as much as you can of an alternate career and prepare for what befalls you. If you are called to a position different than what you have prepared for, you have to be able to adjust accordingly. You need to think all those different paths out and that teaches you to learn to recognize an opportunity when it is presented. My entire career has largely been picking up an opportunity as it 'walked by' and trying to turn that into something when I thought it was important and interesting to do.

In reference to the CBDP, you mentioned there are some clarity issues as it pertains to the organization. For example, you said the Army as the Executive Agency is that still kind of the issue. There was a time when the Services managed their own acquisition program but now it is all under one umbrella…

Yes, but the problem is its under one umbrella and yet if you go back to the early statements on the charter or what passes for the charter for the JPEO, there is still a statement in there someplace that states that the Army remains Executive Agency, but its unclear what that really means today because DTRA handles all the S&T, the JPEO handles all the acquisition except in a few cases where some of the services are off doing something on their own and yet what's the Army role,

if any, other than the fact that it runs the laboratory up at Edgewood and it runs the school -- and maybe that's all it is. Someone really ought to lay out clearly for industry in a broad sense what the roles of the different agencies really are and how they interact. The Advance Planning Briefs for Industry, for example, and Maj. Gen. Reeves gives an excellent briefing on what he does and what he covers, but after everyone completes their briefings, it's still a little confusing as to what everyone does and who is in charge of what.

What should the role of the CBDP be with other US Government agencies? Does industry believe we are duplicating efforts across the federal government?

Ah. Interesting question. Originally, of course, most of the chemical defense effort was centered in the Army. And the biological defense effort – such as it was was focused in the medical community. I *very much* agree with the consolidation instituted by Public Law 103-160. This not only really focused attention on consolidating the service programs, but also facilitated more consolidation of the CB programs. While there are obvious differences in requirements and in the types of expertise needed to address these areas, there are also a lot of similarities – and a lot of the same people (like first responders) who need to know how to address both.

Today, in the DoD, there are several agencies addressing chem.-bio defense. I think this is good, but there are still some coordination problems and some lack of clarity. The CBDP work done by the government laboratories, for example, should, in my view, be funded a little more stably – some additional stability might make the management of those laboratories (like Edgewood Chemical Biological Center (ECBC)) a bit more coherent. Today ECBC, for example, because it's "project funded" with no real base of funding independent of specific projects, has trouble planning for such things as facility upgrades. And the role of the Army as Executive Agent is not at all clear to many people, myself included. But in general, the consolidation has worked well, in my view. Any loss in coherence of the program is far more than made up for, in my view, by having the knowledge and concern much more widely spread across the Department.

And then you have the Department of Homeland Security that has been added in the last few years. That addition to the national security community has not yet coalesced in the broadest sense, not just in the chem-bio defense world. The roles to be played by DHS are still not clear, and the split of responsibilities relative to military preparedness and civilian preparedness, subjects that *both* DoD and DHS are addressing in different ways, is not clear. Perhaps it won't be for a long time.

So yes, I think that industry does believe that there is some duplication of effort but that such duplication is inevitable given the importance of the work in this area and the multiplicity of players.

With the advent of 9/11, a number of industries, entities and government organizations have come into existence. What sort of encouragement would you give to those who may be considering this arena as a profession? Is Chem-Bio Defense here to stay?

Yes, definitely CB defense is here to stay. Both the military side and the civilian side of the business. Actually, in my view, it was *always* here to stay, even though there were folk who weren't aware of that fact! I hope that our national security community paying some real attention to this problem is in fact a deterrent – that the expertise won't actually have to be applied to a real problem, but if the time comes when the expertise – government and industry – is needed, I think we will *all* be grateful that there is more focus today.

Has the Department of Defense reacted in terms of the right investment based on historical events and based on what is unfolding today? What is expected in the future as it relates to the CBDP?

I guess one of my main concerns about the whole CB defense business is its tendency to be "cyclical." I have now seen several cycles of increasing and decreasing investments given to this problem, and I just regret that there can't be more stability. I think the investments themselves have been right on, in general, although I personally would put far more emphasis on decontamination, but it's a program that, in many ways, is *very* dependent on the personal attention of key people. The level of attention and concern of the key civilian and military leadership within the Pentagon *very* strongly affects progress. If there are

Photo by Steve Lusher

My entire career has largely been picking up an opportunity as it 'walked by' and trying to turn that into something when I thought it was important and interesting to do.

There weren't very many women doing professional work in support of the military -- thus there were no female mentors. Many of the females were supporting their male bosses and didn't have time to carve out their own territory.

people there who know enough and who care enough, progress is made *far* more rapidly than if there are not.

So one of my efforts – as with the CB 2010 series of studies that I helped initiate and guide – is to ensure that people new to the building are as well informed as possible. I think the impact of the CB 2010 Studies was significant mostly *because* they were *very* widely briefed, and briefed at the senior military and political levels by the membership of the study group who themselves came from those levels.

As to what is likely to be necessary in the future for the CBDP, it's hard to tell. I like the emphasis on force protection; I like the emphasis on bio protection; etc. etc. But this can all change in a minute if something happens somewhere in the world. So far our military is doing just fine in being prepared to cope with the likely military threats. And the technology that is helping there is being spun off to help with potential civilian preparedness. But perhaps we've totally misjudged the threat? Who knows? Given no other information, I would certainly be supportive of staying the currently planned courses in both chemical and biological preparedness.

Is there sufficient commercial demand for CBRN-related technology that DoD can rely more heavily on private sector technology investments? Or do we need a more robust DoD science and technology base?

In all honesty, I think that the increasing reliance on private sector investment to develop CB technology that can be applicable for the military mission is misplaced. There is no real "commercial" market for CBRN technology. There might possibly be a viable commercial market for detection, protection, and possibly decontamination *items*, but not for pushing the technology. This is – and rightly, in my view – a government role. For the decades during and after WWII – probably until the early 1990s or so – the government was the primary sponsor of *most* technology base advances in this country – in most technology areas. This is no longer true in *lots* of technologies – the commercial world has far surpassed the government in areas such as communications and software development during the last decade or perhaps last two decades. But in something that has so little commercial applicability as CB defense, I think the government still needs to provide most of the S&T resources.

I'm a consultant to many of the companies in the CB defense business – I've encouraged all of them to fully participate as much as possible in the program – using their expertise to their and the government's best advantage. But I don't think *any* of the companies I'm working with or have worked with during the last 15 years believes that a commercial market exists that makes their making significant investments in this business fundamentally in the best interests of their stockholders. And after all, that's what they are really in business for. The fact that the government doesn't have ade-

quate funds to support all the R&D and S&T efforts that it really thinks need to be done is too bad, but you're never going to be able to get industry to make up the difference on the argument that there is a "commercial" market.

How has industry responded to the threats at hand and how can the American public expect industry to continue to respond in the future?

In this area, I think industry will do what the government pays it to do – develop technology; develop specific gadgets; perform training; whatever the government decides is necessary. Other than some supportive efforts to provide material and training to support improving first response capabilities, industry really won't do much themselves, in my view.

How concerned should we be with CBRN technology transfer with foreign countries?

Since almost all the U.S. efforts in CBRN technology (let's limit this particular comment to CB technology – not including the "R" part of it) are *defensive* (or perhaps are related to demilitarization), I don't see any problem with technology transfer. There are those who might argue that if the wrong folk learn how it is that we detect or protect or conceivably decontaminate, they might be able to figure out how to counter these capabilities. Yes, that's true, but there are so many options today that we have no capability to detect or protect against or decontaminate afterwards, that frankly, I wouldn't worry about passing on information about our defensive capabilities.

Would you say the DoD and industry have begun to relax in their preparation for the chemical and biological (CBRNE) threat? Are we misallocating resources?

Yes, there has been some relaxation of preparations to deal with the CBRNE threat (at least the CB portion). That's the reality of the changing priorities of national defense. But perhaps it's a realistic response to the threat – we haven't had any reason to expressly worry about this threat lately. Nothing has actually happened to keep it at the forefront. So what has resulted has been a natural diminution of attention. Not a misallocation of resources! But we shouldn't let it go too far – we need to maintain enough resource allocation here and enough attention so that keep a robust defense against the possible use of chemical and biological capabilities against both our military and our civilians!

In conclusion, is there anything I did not cover that you would care to address?

There's lots that can be added – do I think we're likely to have a terrorist attack against civilians using chemicals or biologicals? Entirely possible. Would I say probable? Probably not. I think the terrorists themselves are probably deterred to some extent by the difficulties of handling such materials. Far more likely to have an attack using plain and simple explosives. Witness the utility of IEDs in Iraq. Do I think there continues to be a threat against our military with chemicals and possibly biologicals? Absolutely. And in that threat I include the use of such capabilities against forces on their bases (Continental United States (CONUS) and Outside the Continental United States (OCONUS)) as well as against military forces in the middle of battle – however one defines battle today. Therefore I will continue to fully support the CBD as much as I possibly can!

If we want to get back to the issue of women in this business, let me say that I will continue to encourage young women to get into it – there's a real future here and some important and worthwhile and technically interesting set of problems that continue to need the best attention we can give them. I frankly hope that some of my pioneering (which I honestly didn't view as pioneering that much when I was in the middle of doing it all) is of benefit to those young women. May they have fewer obstacles than I had but may they gain as much strength from the adversity that they *do* and *will* face.

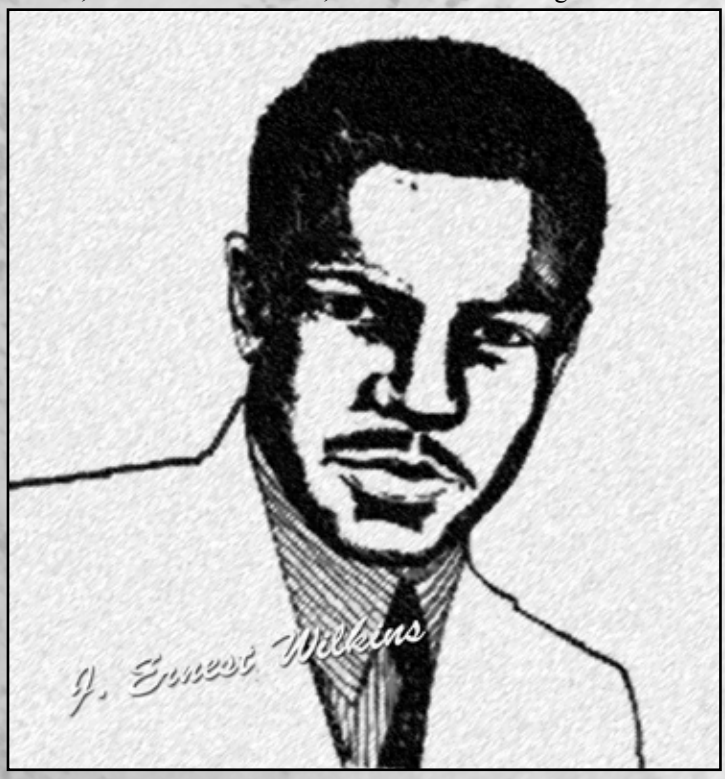
Photo by Steve Lusher

Former Deputy Assistant Secretary of the Army (Research and Development), Principal Deputy Assistant Secretary of the Army (Research, Development and Acquisition) and Deputy Under Secretary of the Army. Prior to her government service, Ms. Hoeber was Deputy to the Director, Policy and Strategy Analysis Division, System Planning Corporation.

The GENESIS of the Nuclear Age

By Stephen Gude, Assistant Editor, Chem Bio Defense Magazine

The Manhattan Project, America's effort to develop and produce a nuclear bomb during World War II, marked the genesis of the nuclear age when it began in 1942 and expanded to various locations across the United States, including Hanford, Washington, Oak Ridge, Tennessee, Los Alamos, New Mexico and various universities in different states. The public face of the project was famed physicist J. Robert Oppenheimer, but behind the scenes, scientists from different disciplines toiled with the complexities of harnessing the power of the atom for defense and later, for peace.



One fact that remains a footnote in the history of atomic research and development is the participation of several African American scientists in the Manhattan Project. For the duration of the project, white scientists worked together with black scientists, prompting physicist Arthur Holly Compton to comment that the Manhattan Project was unique for bringing together "colored and white, Christian and Jew," for the greater good of the country.

The number of black scientists involved in the project varies depending on the source, but it has generally been established that up to 16 worked on the Manhattan Project.

These men included Lloyd Albert Quarterman, Edwin R. Russell, George W. Reed, Moddie D. Taylor and the brothers William J. and Lawrence H. Knox. J. Ernest Wilkins Jr., a young physics and mathematics prodigy that some called the "Black Oppenheimer," also participated during his studies at the University of Chicago, and Jasper B. Jeffries and Benjamin F. Scott are also mentioned.

The physical scale of the Manhattan Project, as described above, was vast, but it paled in comparison to the luminous academic minds brought together for the project. Working alongside the well-known white scientists of the period helped the black scientists open doors into teaching positions at white universities during the next two decades and disproved many of the notions held by people who were less well-informed about their abilities.

The scientists chronicled here have left behind an undeniable legacy of towering achievement – they helped usher in the atomic age.

Dr. Moddie Daniel Taylor

Moddie Daniel Taylor was born in Nymph, Alabama on March 3, 1912. He earned a Bachelor of Science from Lincoln University, Jefferson City, Missouri in 1935 and a Master of Science in 1938 from the University of Chicago. Taylor earned his Doctorate from the University of Chicago in 1943, where he also worked on the university's Manhattan Project assignment during World War II. The university's mission was to demonstrate that a fissionable material could achieve critical mass and prove that nuclear fission could be used as an energy source (or a weapon -- the atomic bomb). The scientists at the university also worked on metallurgy for the casing of the bomb.

Dr. Taylor was appointed Professor of Chemistry at Howard University in 1959, a position he held until 1969. That year, he became the Chairman of the Howard University Chemistry Department, where he served until 1976. [1]

Lloyd Albert Quarterman

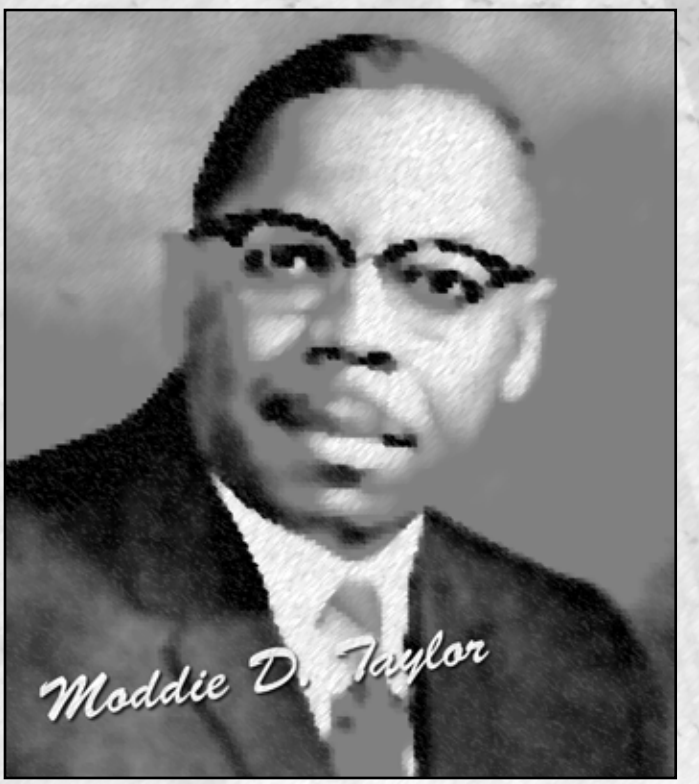
We are in an age of discovery, we live in the world of the unknown. That's the only place to live.
—Lloyd Quarterman

Dr. Lloyd Quarterman worked with two of the most illustrious scientific minds of the twentieth century—Albert Einstein and Enrico Fermi. Quarterman was born May 31, 1918, in Philadelphia. He attended St. Augustine's College in Raleigh, North Carolina, where he continued the interest in chemistry he had demonstrated from an early age.

Just after he completed his bachelor's degree in 1943 he was hired by the U.S. War Department to work on the Manhattan Project. Originally hired as a junior chemist, he worked at both the secret underground facility at the University of Chicago and at the Columbia University laboratory in New York City. Quarterman's main task during his time in New York was to isolate an isotope of uranium necessary for nuclear fission.

At the secret Chicago facility, where the unused football stadium had been converted into an enormous, hidden laboratory for the "plutonium program," Dr. Quarterman studied quantum mechanics under renowned Italian physicist Enrico Fermi.

[1] *Derived from information provided by Physicists of the African Diaspora website: http://www.math.buffalo.edu/mad/physics/physics-peeps.html*



When the Manhattan Project ended in 1946, the Chicago facilities were converted to become Argonne National Laboratories, and Quarterman was one of the scientists who stayed on. His contributions included work on the first nuclear power plant, and he was also part of a team of scientists who made the first reactor for Nautilus, the first nuclear-powered submarine.

Dr. Quarterman was cited for his research on the Manhattan project in a certificate, dated August 6, 1945, by the Secretary of War for "work essential to the production of the Atomic Bomb thereby contributing to the successful conclusion of World War II." [2]

J. Ernest Wilkins

J. Ernest Wilkins, Jr., who was born in 1923 in Chicago, first attracted nationwide attention when he earned a bachelor of science in 1941, at age 17, and his doctorate from the University of Chicago at 19. Wilkins went on to earn a Ph.D. in Mathematics in 1942. He received a Bachelor of Mechanical Engineering in 1942 from New York University, followed by a Master of Mechanical Engineering in 1960. He served as an Instructor of Mathematics at the Tuskegee Institute from 1943 to 1944.

From 1944 to 1946, Dr. Wilkins was an Associate Physicist and Physicist on the Manhattan Project. He taught mathematics and did research at University of Chicago's Metallurgical Laboratory, where work was being conducted by Enrico Fermi's research group on the atomic bomb project. After the Manhattan Project, he was a Senior Mathematician for the Nuclear Development Corporation of America, Assistant Chairman of the Theoretical Physics Department, General Atomic Division of General Dynamics Corporation, Distinguished Professor of Applied Mathematical Physics at Howard University and a joint owner of a company which designed and developed nuclear reactors for electrical power generation.

Dr. Wilkins' primary achievement is the development of radiation shielding against gamma radiation emitted during electron decay of the sun and other nuclear sources. He developed mathematical models by which the amount of gamma radiation absorbed by a given material can be calculated. This technique of calculating radiative absorption is widely used among researchers in space and nuclear science projects.[1]

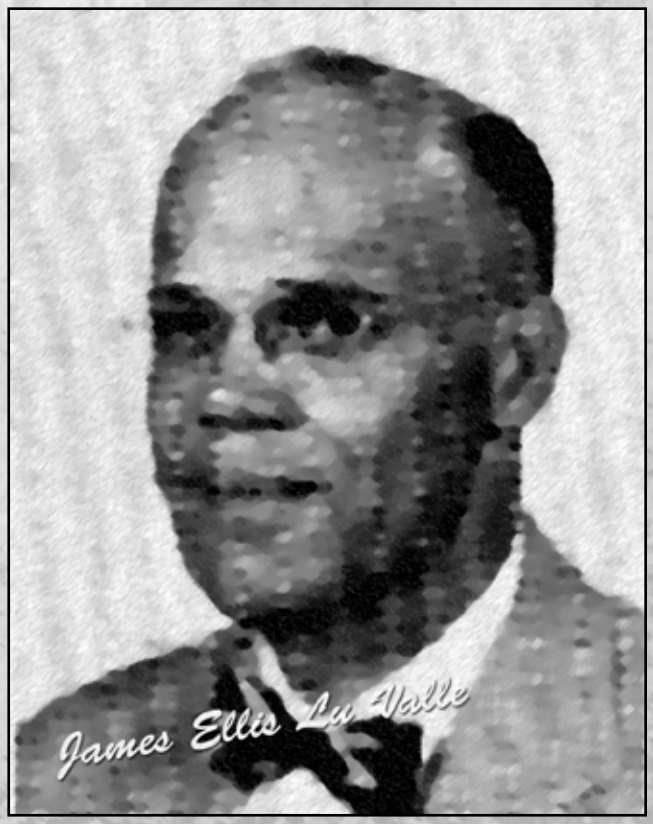
Edwin R. Russell

Edwin Roberts Russell was born in Columbia, South Carolina on June 19, 1913. He received a Bachelor of Arts from Benedict College in 1935 and a Master of Science from Howard University in 1937. Mr. Russell served as an Assistant Instructor and Instructor in Chemistry at Howard University from 1936 to 1942. He served as Assistant Research Chemist at the Metallurgical Laboratories for the University of Chicago (1942-1947). Edwin Russell was involved in the Manhattan Project as a research chemist. After the project ended, Russell was employed as a research chemist for the E.I. Du Pont de Nemours & Company, Inc. at the Savannah River Laboratory, Aiken, South Carolina.

Mr. Russell's research interest involved bio-assay, radioactive tracer, gas absorption and ion exchange absorption, monomolecular films, and radioactive waste treatment.

James Ellis Lu Valle

James E. Lu Valle was born in San Antonio, Texas in 1912. He received a Bachelor of Arts from UCLA in 1936. In 1937, Lu Valle earned a Master of Arts and Ph.D. in 1940 from California Institute of Technology. Dr. Lu Valle taught at Fisk University as chemistry instructor from 1940 to 1941. From 1941-1942, Dr. Lu Valle began working for Kodak Research Laboratory. During World War II, Dr. Lu Valle worked with Office of Scientific Research and Development (OSRD) on the Manhattan Project at the University of Chicago during 1942 and at Cal Tech, 1942-1943. [1]



2 *Source -- world of chemistry and blackhistorypages.net*

A discussion with Sue

By Julius L. Evans,
JPEO-CBD Public Affairs Officer and Editor

Sue Reeps is a 1973 graduate of Cornell University where she received a Bachelor of Science Degree in Design and Environmental Analysis, with an emphasis on Functional Clothing Design.

She began her professional career at ILC Dover as a Design Engineer. While in that position, she was responsible for the design and development of ORTHO-WALK©, a pneumatic orthesis for paraplegics and hemiplegics. She coordinated the design effort, developed all prototype, production, and custom patterns and designed many of the printed materials associated with the product. She developed all of the hemiplegic designs as well as a variety of special ortheses including an osteogenesis imperfecta brace, an air splint, and a fracture brace. She also developed the measurement and fitting procedures for the device and presented those procedures at seminars for orthotists throughout the United States. Other efforts were aimed at preliminary design work on the Shuttle Space Suit for National Aeronautics & Space Administration (NASA).

In 1975, she began working at the Naval Air Development Center where she eventually became the Team Leader and Program Manager for the Navy's aircrew clothing and equipment product line which included anti-exposure garments, flight clothing, cold weather clothing, and anti-g garments. In recognition for her achievements, particularly in the anti-exposure area, she was named the NADC Woman of the Year in 1985. In 1991, she was promoted to the Head of the In-Flight Safety Systems Branch where she oversaw the development of laser eye protective devices, aircrew breathing systems and components such as on-board oxygen generating systems, breathing regulators, and the Navy's "Combat Edge" system of improved anti-g protection including positive pressure breathing for use in high performance aircraft such as the F/A-18.

Reeps returned to her protective clothing and textiles "roots" in 1994 when she moved to the Navy Clothing and Textile Research Facility (NCTRF) in Natick, MA where she recently retired as the Director of the Protective Clothing Division. Her Division was responsible for the development and evaluation of all shipboard protective clothing and accessories, including firefighting and damage control ensembles, cold and wet weather gear, flame retardant utility clothing, and ballistic and chemical protective items. While acting as the Division Director, she also served as the Systems Engineer for the Joint Protective Aircrew Ensemble (JPACE) Program which received full rate production approval from MG Reeves in August 2006. As such Systems Engineer, Sue was responsible for technical leadership of JPACE which will be used by aircrew throughout the for development of the next generation Chemical-Biological Ensemble for aircrew of all U.S. military services and the U.S. Coast Guard.

In addition to her Cornell degree, Reeps has a Masters Degree in Engineering Management from the University of Pennsylvania which she received in May 1994. She is married and the mother of a son who lives in Connecticut and a daughter who lives in Delaware Pennsylvania.

Sue retired from government service in March 2006, after more than 30 years of service to the Navy. Upon her retirement, she was awarded the Navy Meritorious Civilian Service Award as recognition for her life-long commitment to the protection of the warfighter. Sue has recently returned to work part-time as an independent subcontractor supporting the Aviation Deputy Joint Program Manager – Individual Protection (JPM-IP).

What was it about the environmental sciences that captured your interest as it relates to your environmental analysis degree?

The environmental analysis part of my degree relates to the aspect of functional clothing design that included a focus on analyzing the environment in which the human body had to perform while wearing clothing. I found the technical emphasis of looking at the functions clothing systems had to perform, and the interface of clothing with the human body, quite fascinating. Producing clothing that provides the protection against environmental conditions and hazards, while still allowing the body to perform at its peak, was a challenge that excited me.

When you were in college, in what profession did you envision yourself? Did your major change or did you pick one and stay with it throughout your studies?

When I first went to college, I went to Simmons College in Boston and was planning to be a home economics teacher. Within the first year, I had determined that I needed more of a challenge and transferred to Cornell University. At Cornell, I was fortunate to have a professor named Sue Watkins who mentored me in the study of functional clothing design and ultimately helped me obtain my first job with ILC Dover. While at college, I worked as Sue's teaching assistant and together we redesigned the Cornell hockey team uniforms to improve impact protection, and of course the look!

Were you a visionary at the onset of your professional career? What changes did you contemplate contributing?

I was not a visionary at the onset of my professional career. Like most new graduates, I was just glad to have a job! Once I started working I was very fortunate to be given both lots of responsibility and mentoring. I was assigned to work with a very experienced pattern maker who had done all of the patterning for the Apollo space suits. ILC was at the end of the Apollo contracts, and it was prior to the big push for the Shuttle suits, so they were down-sizing while also dabbling in other product lines. These product lines included motorcycle accessories and the "Ortho Walk," which was a pneumatic orthesis for paraplegics and quadriplegics. Since the expe-

Reeps

A Pioneer in Individual Protection

rienced pattern maker with whom I was working was on the verge of retirement, I was "saved" from losing my job during the lay-offs following the end of the Apollo contracts. ILC was training me to take over his responsibilities.

What was the very first significant project on which you worked and what are your most memorable thoughts of that time?

My first significant project was my work at ILC as the project engineer on the redesign and development of "Ortho-walk," a pneumatic orthesis for paraplegics and hemiplegics. It was extremely rewarding as I had the opportunity to work directly with doctors, orthotists, and patients, often patterning custom items to address specific patient needs. Because of ILC's small work force at that time, I was given responsibility not just for patterning, but for overseeing the production of the items, as well as developing the training and use information and maintaining direct interface with the medical teams. I developed all of the hemiplegic designs as well as a variety of special ortheses including an osteogenesis imperfecta brace, an air splint and a fracture brace. It was a great opportunity for me and definitely increased my self-confidence in being able to function in the "real world."

What is ILC Dover and what is the Ortho-Walk? (The pneumatic orthosis for paraplegics and hemiplegics.)

ILC Dover is a company that originally started as International Latex Corporation and initially produced a variety of latex products including Playtex bras. As I mentioned before, they were the company responsible for the development and fabrication of the Apollo space suits and then later the Shuttle space suits. The company name during the Apollo program was ILC Industries. While I worked for them, they changed their name to ILC Dover since their headquarters was located in Dover, Delaware at the time. They are now located in Frederica, Delaware.

The Ortho-Walk was developed in France and ILC obtained the rights to market and produce the item in the US. It was an inflatable brace that was used by both paraplegics and hemiplegics and provided a lighter weight alternative to traditional metal braces. It was designed with pneumatic tubes located vertically on the front and back of the legs. The tubes were inflated, by way of a portable compressor, to a high enough pressure to support the hip and knee joints. This allowed patients to stand and move around more easily with crutches, thereby improving circulation and overall health. Fitting was accomplished by a series of laces, much like an anti-g suit used by aviators.

How did your work progress from one area to the next? You initially worked in prosthetics and that transitioned to clothing. How did that come about?

Since the prosthetics I worked on were basically functional clothing items, i.e., they were made from fabric, based on flat patterns, and produced in much the same way as other items of clothing, it was not an unlikely transition. As I said, the similarity between the Ortho-Walk and the anti-g suit struck me immediately when I went to work for the Navy.

It seems you have worked in professions that help people. How have you viewed your work as it relates to helping others?

I believe that to be the most rewarding part of my career; the fact that it has been focused on helping people and hopefully saving lives. In carrying out my work I have also always tried to help and support my associates, co-workers and subordinates so they too can maximize their personal contribution to our ultimate goal of helping our warfighters.

What were the differences in working with in the medical field and then changing to the warfighting field?

Actually, they are very similar in many ways. In the medical field, I was working with doctors to address the needs of injured people, many of whom interestingly were war veterans. In the warfighting field, I was once again working with doctors, this time flight surgeons, as well as with aerospace physiologists, with the focus on preventing injuries from occurring. In both cases, it was human physiology that was the driving force behind the product characteristics.

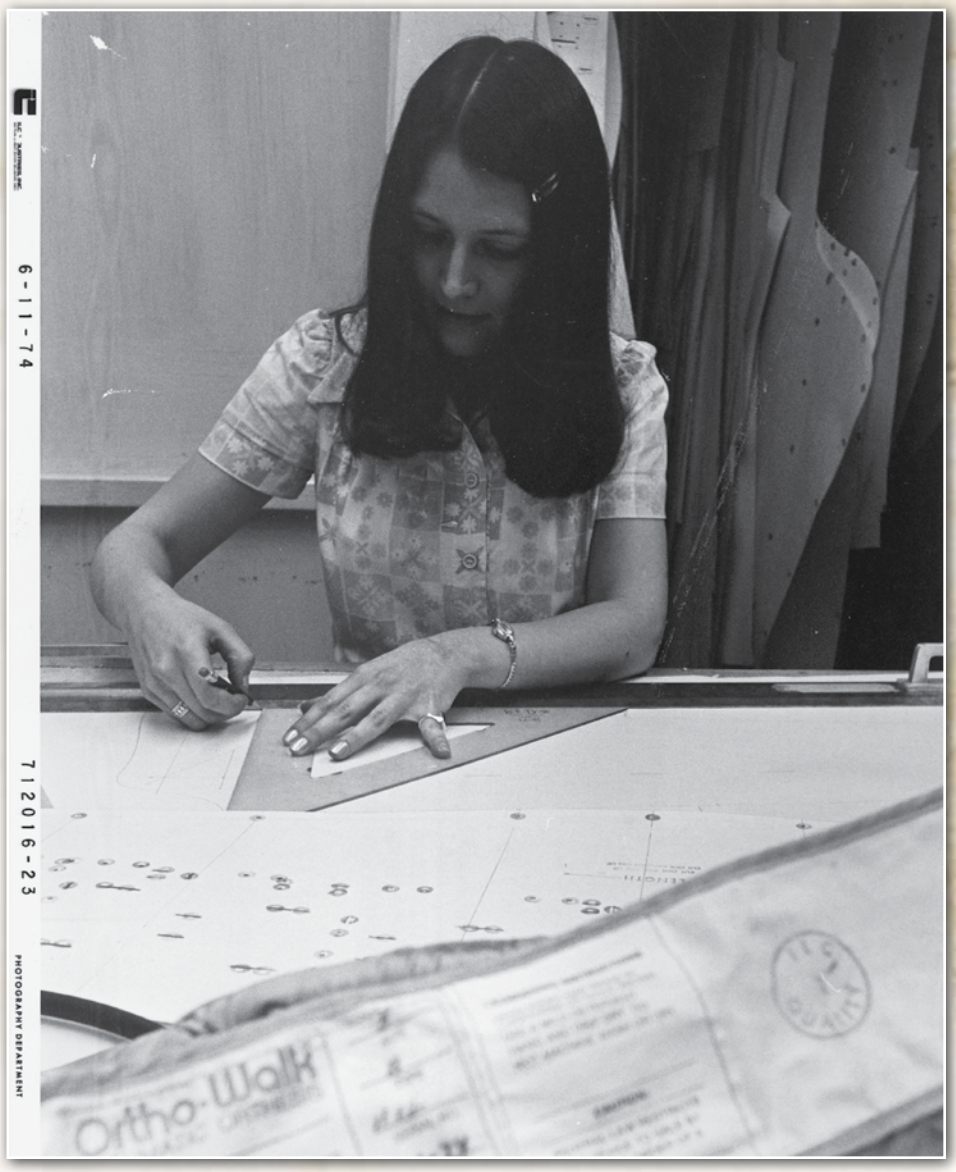
USS Eisenhower - Pre-catapult. (from left to right) Holli Galletti, Colleen Swavely, Tammy Wagner, Tara Capecci, and Sue Reeps

What was the most exciting part of your career once you transitioned from one field to the other? Did you ever personally wear some of the equipment on which you worked?

The most exciting part was working with the actual users and coming to understand all of the stresses and hazards faced by our warfighters. I was always invigorated after returning from a meeting or test where we got feedback on what was good and bad about the items they currently used and the ones we were developing. As for personally wearing the equipment, I did occasionally participate as a test subject and also completed Navy Water Survival training while wearing aircrew equipment. I also wore the passenger helmet I worked on and the passenger life preserver "operationally" when they catapulted me and a group of my teammates off the USS Eisenhower following a "Scientist at Sea" opportunity. It was quite a thrill and my son was very jealous of me!

Were there any suggestions you received from the field that you were able to incorporate? Was that a standard practice...as in acting on suggestions?

Throughout my career, my team has always sought and received input from the field. When I worked in Naval Aviation, the Naval Air Systems Command (NAVAIR) held annual meetings to respond to action chits from the field on various issues that users felt needed attention. NAVAIR also held Annual Operational Advisory Group Meetings for Crew Systems items. Representatives from all of the various aviation communities (fixed wing ejection, fixed wing non-ejection and rotary wing) would be briefed on the ongoing research and development projects and then would have input both on the direction and progress of projects and in prioritizing those most critical to them. It was standard practice to solicit feedback throughout the process so that we would get the design right and meet the real needs. In the Chem-bio projects, we likewise have gone out to the field to discuss requirements and design ideas as the designs evolved in order to integrate user preferences and suggestions as much as possible. In fact we included user acceptability as an evaluation factor prior to awarding contracts for the Joint Protective Aircrew Ensemble (JPACE) Program. We also worked very closely with Operational testers and evaluators throughout the development phases to ensure they would have adequate data to draw conclusions on the effectiveness of the clothing and equipment items. Most developmental tests include soliciting subjective feedback from the test subjects who are often active military.



Sue Reeps drafting flat patterns for a custom-fit ILC Dover ORTHO-WALK©

What was the first item in the chemical and biological arena on which you worked? What were your specific responsibilities and were there any accomplishments you recall about your involvement with the product.

My first involvement with the chem-bio area was as the supervisor of folks who were supporting the original Joint Service Lightweight Integrated Suit Technology (JSLIST) project. When I assumed the position as Division Director of the Materials Research Division at NCTRF in 1994, the JSLIST project was well underway and members of my Division were already providing direct test and program coordination support. I was not personally involved in performing the work but rather provided managerial oversight to my subordinates. My first direct involvement with CB individual protection was through the Army Air Warrior Program. I originally got involved in that program at the request of NAVAIR who asked me to monitor the program for potential Navy interest. I soon found myself much more intimately involved in the program as an active member of the Air Warrior team. One of the key goals of the Air Warrior project was to provide a chem-bio ensem-

ble that could be worn for a full 5.3 hour mission. At that time, aircrews were only able to fly in full chem-bio gear for about 2 hours before they were overcome by heat stress. To accomplish the 5.3 hour mission goal, a personal microclimate cooling system was included in the developmental Air Warrior ensemble. The cooling system included a liquid cooled vest that was worn under the Chemical Protective Undergarment (CPU), which in turn was worn under the Aircrew Battle Dress Uniform (ABDU). My NCTRF design team, led by my close friend and associate Scena Proodian, was selected by the Air Warrior Program Manager to develop a new ABDU along with a modification of the CPU that would accommodate wearing the cooling vest underneath and provide a pass-through of the cooling hose to the aircraft mounted cooling generator. My design team and I also worked closely with the cooling system developers at Natick Labs to ensure the cooling garment fit well and accommodated all users. As a joint service team, we were successful on all fronts and the modified CPU, new ABDU, and cooling system have all been fielded to the Army as part of Air Warrior Block 1. Most important, the goal of providing the Army warfighter the capability to fly a 5.3 hour mission in Mission Oriented Protective Posture (MOPP) 4 had been achieved!

Are there any instances when someone used one of the products you created, modified, worked with and someone from the field relayed a personal story of how your product impacted them? Are there any similar anecdotes you recall?

The most striking memory I have was from 1978 when I was asked to interview some aircrew who had survived the crash of a P3C aircraft in the North Pacific. The crash had occurred as a result of an aircraft malfunction. At the time of the crash at sea, there were 14 men aboard, 10 of which ultimately survived. The survivors relayed to me their experience using the quick-donning anti-exposure suits that were aboard the aircraft. The suit they used had been developed many years prior and I had no direct involvement but was now responsible for it and for any future development. The men relayed that the suit had been essential to their survival. That said, they pointed out the age of the suits as being an issue because not all of them functioned fully with leakage noted by some. Also, they lacked a full understanding of how the suit was expected to function in that they were not sure whether or not to don supplemental insulated garments underneath. Some had worn the supplemental garments (which was the correct choice) while others had not. This pointed out the need for an increased level of training. The interview also revealed the value of personal motivation when in a survival situation because those crewmen who perished were all young, none were married, and each needed constant attention to stay awake. It appeared that in some way they chose to give up while others did not. It was an incredible experience to meet with the courageous survivors and has been a frequent inspiration for making sure the job is done right – because it really does matter. Their input was extremely valuable as we embarked on a redesign on the quick-don anti-exposure suit.

There is a scene in the movie "Apollo 13" where the engineers and scientists throw items on a table in an attempt to figure out how to fit a square into a circle. Can you share with me an experience that you and your teams may have had similar to this or that reminded you of the movie?

As a team, we often conduct design brainstorming sessions during which we gather together as many people as we can and challenge ourselves to come up with unique approaches to addressing problems. One example that comes to mind was a project focused on improving the interfaces between components of the JSLIST ensemble. As a team, we brainstormed many ideas and then eventually down-selected the best ideas which we prototyped and tested. From this brainstorming session, improved approaches to the wrist and ankle interfaces were developed that eventually were incorporated into the JPACE garment and ultimately resulted in increased levels of protection.

Can you describe one of the most intense meetings you had with your team that led to the successful creation or improvement of a warfighter product?

During the Developmental Testing phase of JPACE it was shown that there was a potential for reduced local protection for users who wore legacy face seal respirators with external hoods. During our Milestone review with Maj. Gen. Reeves (JPEO-CBD) we committed to coming up with a means to improve protection prior to the commencement of Operational Testing (OT). My team met to brainstorm solutions that we felt we

Sue Reeps meeting with Navy and Air Force representatives at the School of Aerospace Medicine, Brooks AFB, to discuss potential design features of a Joint Service Anti-G Garment Major Bill Pfoff (Brooks AFB), Lionel Weinstock (NAVAIR), and George Kydd (NADC).

could evaluate and incorporate quickly and we were able to quickly identify seven alternatives, six of which we felt were viable. We then tested those six alternatives and demonstrated that four of them would significantly increase protection when JPACE was worn with this type of mask. Of those four, the combat developers selected the one they felt would be most viable operationally. All of this occurred within three months of the Milestone review and well in advance of the start of OT.

What has given you the most joy in your professional career? What's the secret to not getting burned-out from working more than 30 years?

Variety is the spice of life! I think I never got burned out because there was always a new challenge to work on and I felt the work was extremely important. Thankfully, I have always experienced a feeling of autonomy in my work that allowed me to pursue whatever direction I thought was right. Along with that autonomy, I have had the pleasure and honor to work with many hard-working dedicated professionals, who also knew how to have fun together. It is in working together as a team that we have accomplished much. That is the real key to my success – shared information and support of my co-workers. It made the job so much more enjoyable and productive!

Can you give me your prospective of working in a male dominated profession/environment? You've held many leadership positions. Have you seen changes in the attitudes of those with whom you have worked throughout the years and were those changes in attitude predominant or subtle?

When I first embarked on my career as a professional female, I must admit I was definitely in the minority. In fact one of my job interviewers at ILC came right out and asked me if I thought I could handle working with all men. The idea that this should concern me had frankly never crossed my mind. After all, I grew up trying to keep up and compete with an older brother! Seriously, my philosophy and work ethic has always been that people should be judged on their own merits, not on the "group" they belong to. For me, that meant always doing the best I could and not expecting positive or negative feedback just because I was female. While I believe that early in my career my performance was probably scrutinized more closely than my male counterparts,

Sue Reeps during a buoyancy test of and experimental aircrew life preserver during developmental testing

I feel my persistence was ultimately rewarded. I do believe that I tested the waters somewhat by choosing to work part-time for more than 10 years after my children were born, something that did initially raise a few eyebrows from some of my male associates. I must give credit to the male supervisors, including Bill Zarkowski, Al Hellman and Jon Harding who supported me in my attempt to try to do it all. Without their support, I would not have had the personal balance I needed and ultimately my career would have suffered. I did increase the number of professional females along the way, by hiring several as I progressed into higher levels of responsibility at NADC/NAWC. The first professional female I hired, Laurie Welch, later left Government service but interestingly, I rehired her back into Government service shortly before I retired. She has been a good friend and close associate all of the intervening years. By the time I returned to a full time schedule, and assumed a direct supervisor position, I was no longer alone and had developed a circle of fellow female professionals with whom I have maintained a strong personal and professional relationship. I was recently told by some that my ability to balance a professional career with my family responsibilities as a wife and mother was viewed as a positive role model for many of my younger female associates to follow. As a female supervisor, I believe I was completely accepted as an equal by both my male counterparts and my subordinates. As a supervisor, I have always tried to nurture each individual to help them achieve their full potential and to encourage independent thought and responsibility.

Can you describe the changes from working with a one-service organization as opposed to working in a joint environment?

Joint service work is definitely a challenge. It's not a new idea though either. One of the first things I worked on as a Navy employee was an attempt to estab-

Sue Reeps and Jules Lewyckyj of NADC sampling experimental knit Nomex© flight suit fabric for evaluation

lish a joint service anti-g suit with the Air Force. At that time, the attempt was not successful, primarily because no one was forcing the issue from higher up. What's different in Chemical-Biological Defense (CBD) is that the services don't have a choice. As we all know, it's mandated by law. When I first got involved in joint service CBD, I think the biggest eye-opener for me was realizing that each service had its own culture and its own way of doing things. The differences are often driven by the different missions each service is responsible for and the real challenge was trying to balance everyone's priorities and concerns in a respectful way. Over the past several years, as the JPACE Systems Engineer, I learned a tremendous amount about the other services and found myself truly wearing a 'purple hat' as I executed my role. I was just as likely to be found arguing for a point that I knew was a valid concern of the Army or Air Force as I was to argue for a valid concern of the Navy or Marine Corps. I think the establishment of the JPEO structure for CBD was definitely the right thing to do. By establishing a single project manager for all individual protection, I am personally very hopeful that the next generation of individual protective systems will be much better integrated and provide the right stuff for the warfighter from head-to-toe. With a joint service environment, everyone needs to be ready and willing to compromise for the good of all. With JPACE, we definitely went through a period of inter-service conflict at the beginning but eventually we melded into a high performance team that I'm so proud to be part of.

You retired in March 2006; hardly enough time to miss the workplace, or is it? What do you miss most about your job? Why are you considering returning?

Do I miss it? As my friends from Minnesota say, you betcha!!! What I miss most is the personal challenge and working with my team, particularly the problem solving and leadership aspects. I feel like I still have work to do to fill the capability gaps in the chem-bio protection of our warfighters and I really want to be part of that! I've come to realize that my work is very much a part of who I am and that I have to stay involved to feel whole.

Sue Reeps evaluating integration of the JPACE coverall with the Anti-exposure Coverall on female test subject Julee DiPlacido (NAWC)

Upon your return, what products would you like to work with most (if it's divided in such a way) and why?

I want to come back and continue working on the CB protective ensembles, particularly for the aviation communities. I think that is where my strength lies and I hope to continue to integrate my knowledge of CB protection with my knowledge of all of the other aircrew protective needs and ultimately help to develop an improved mission capability for the future.

As it relates to your profession, what are your views on the US involvement in Iraq and Afghanistan? (I'm not looking for whether you or not believe we should be there, but more so your thoughts on the safety of the troops and your involvement in the development of their protective gear.)

I am just so proud of our troops and the sacrifice their families are making to have them there keeping our freedom secure. While I'm glad that we have not had to put the CB protective gear to the ultimate operational test, I am confident it would provide the protection if needed. What is clear to me is that our job is not done. The gear needs to be continuously improved in order to enhance mission capability, address emerging threats, and maintain our superiority on the battlefield. We need to reduce the heat stress and continue to improve the integration among components of the CB system and other mission gear.

Did you foster relationships with any of the people who wear the products on which you've worked?

Throughout the course of my career, I have developed relationships with many military folks who have used my products. Most of these were temporary relationships tied to specific projects that we were jointly working on. Two particular groups of military folks who have repeatedly crossed my path are the Naval Aerospace Physiologists and the Fleet Maintainers. These dedicated professionals have been my link to the Fleet throughout the years, helping me to fully understand the operational environment and the logistic challenges faced by warfighters. In particular, I'd like to acknowledge Captain (retired) Hal Pheeny who was an Aerospace Physiologist that I have had the pleasure to work with throughout my career. I was deeply honored to have him and his wife present at my recent retirement and I consider him a close friend and mentor.

‘The Reason for Our Success is Our People.’

Acquisition Director of the Year OCT. 8 – Army Lt. Col. James Simpson (center), DCMA Central Pennsylvania and DCMA Northern Iraq, was honored at the 2006 U.S. Army Acquisition Corps Annual Awards Ceremony held in Arlington, VA. Lt. Col. Simpson received the award for Acquisition Director of the Year at the Lieutenant Colonel Level for his extraordinary contributions and brilliant leadership as commander of the two DCMA offices. Under his leadership, the organization played a critical role in fielding 281 reset and 156 recap Bradley Fighting Vehicles to units deploying in support of Operation Iraqi Freedom. The Honorable Claude M. Bolton Jr. (right), Army Acquisition Executive and Assistant Secretary of the Army for Acquisition, Logistics & Technology (ASAALT), hosted the event with the assistance of Mr. Craig A. Spisak, Director, U.S. Army Acquisition Support Center. Army Col. Fred Mullins, Deputy Director, U.S. Army Acquisition Support Center, presided as Master of Ceremonies. Also in attendance was Army Lt. Gen. Joseph L. Yakovac (left), Military Deputy to the ASAALT and Director, Acquisition Career Management. This annual event acknowledges the accomplishments of the acquisition workforce’s most extraordinary members and the teams they lead. These uniformed and civilian professionals work behind the scenes to provide combatant commanders and their Soldiers the weapons and equipment needed to execute decisive, full-spectrum operations in support of global combat missions.

During the 2006 Thanksgiving and Christmas holiday seasons, the JPEO-CBD Headquarters and Guardian families opened their hearts and wallets (and purses) for a number of charity organizations that help less-fortunate families throughout the National Capital Region. Pictured below are a few of the gifts collected and donated to those organizations. Not pictured are the multiple pounds of food that was collected and donated as well.

Photos by Steve Lusher

200th BIDS Fielding

200th M31E2 JBPDS BIDS: The 200th M31E2 Joint Point Biological Detection Systems (JPBDS) Biological Integrated Detection System (BIDS) was fielded to the 342d Chemical Company (Reserve), 3d Platoon, located in Chicago, IL, on October 14, 2006. Capt. Guinn, Company Commander for 342d Chemical Company, conducted a joint inventory and signed for the 200th M31E2 JBPDS BIDS and six additional BIDS from the Joint Program Manager Biological Detection System (JPM BDS), JBPDS Force Modernization Logistic Team (FMLT). The total package fielding was a joint effort with JPM BDS, JBPDS Force Modernization Logistic Team, Contract Logistic Support Team and 342d Chemical Company Command. This fielding was one of the many successful fieldings to the BIDS Chemical Companies that has been on going since 2003.

Photos by Steve Lusher

Pictures 1st row, 342nd Chemical Company, 3rd Platoon, 2nd row left, CLS, Mike Busch with 3rd Platoon Soldiers conducting accountability of the basic issue items, 2nd row middle, Kathie Ashley handing off Capt. Guinn the 200th M31E2 JBPDS BIDS keys, 2nd row right, 3rd Platoon Soldiers preparing for start up procedures on the M31E2 JBPDS, 3rd row left, The JBPDS FMLT and 342nd Chemical Company; Robyn Litle, Sgt. 1st Class Washington, Kathie Ashley, Cpt Guinn, 1st Lt. Schlueter and Mike Busch. Top picture, Soldiers conducting JBPDS start up procedures inside the BIDS. Bottom picture, Soldiers assisting with the joint inventory.